In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-21. (Cancelled)

22. (Currently Amended) An apparatus, comprising:

a settling chamber having a top section and bottom section;

an outlet port positioned on the top section; and

an inlet port positioned on the bottom section; wherein a ratio of height to width of the settling chamber is ~~greater than 0.7.~~ between about 1:1.14 and about 1:4 and a ratio of the position of the inlet port relative to the bottom section to the diameter of the inlet port is between about 1:2 and zero.

23. (Currently Amended) The apparatus of claim 22, wherein the ~~ratio of height to width of the settling chamber is greater than 1.2.~~width is about 48.0 inches.

24. (Previously Presented) The apparatus of claim 22, wherein the bottom section comprises:

a base; and

an inlet port connected to the sidewall; and

the ratio of the size of the base to the size of the inlet port is approximately 4 to 1.

25. (Previously Presented) The apparatus of claim 24, wherein the inlet port is located approximately one half the inlet port size (diameter) higher than the base.

26. (Currently Amended) The apparatus of claim 24, wherein the distance from the bottom section to the inlet port is about 6.0 inches. ~~base is circular~~.

27. (Previously Presented) The apparatus of claim 24, wherein the sidewall is cylindrical.

28. (Previously Presented) The apparatus of claim 22, wherein the inlet port is generally circular and a central axis of the inlet port is perpendicular to a central axis of the sidewall.

29. (Currently Amended) The apparatus of claim 27 [[6]], wherein the inlet port is generally circular and a ratio of a diameter of the sidewall to a diameter of the inlet port is 4 to 1.

30. (Previously Presented) The apparatus of claim 22, wherein the inlet port is generally circular and a ratio of the height of the settling chamber to a diameter of the inlet port is greater than 2.8.

31. (Previously Presented) The apparatus of claim 30, wherein the ratio of the height of the settling chamber to the diameter of the inlet port is greater than 4.8.

32. (Previously Presented) The apparatus of claim 22, wherein the inlet port and the outlet port are generally circular and a ratio of the diameter of the inlet port to a diameter of the outlet port is 3 to 1.

33. (Previously Presented) The apparatus of claim 22, wherein the top section has a frustoconical shape.

34. (Previously Presented) The apparatus of claim 33, wherein the top section has a cone angle of 90 degrees.

35. (Previously Presented) The apparatus of claim 33, wherein the outlet port is located at a top portion of the frustoconical shape.

36. (Previously Presented) The apparatus of claim 22, wherein the apparatus is constructed of stainless steel.

37. (Previously Presented) The apparatus of claim 22, wherein the inlet port is welded to the settling chamber.

38. (Previously Presented) A method for separating particles comprising the steps of:

introducing a gas fluidized particle stream into a settling chamber, the settling chamber comprising a bottom section, a top section and an outlet port;

establishing a gas stream flow pattern within the settling chamber that retards transportation of one group of particles to the outlet port and facilitates transportation of another group of particles to the outlet port, wherein the gas stream flow pattern includes a first recirculating flow pattern in the bottom section and a sympathetic second recirculating flow pattern in the top section; and

collecting the other size of particles at the outlet port.

39. (Previously Presented) The method of claim 38, wherein the one group of particles has particles less than 10 microns and the other group of particles has particles greater than 10 microns.

40. (Cancelled)

41. (Previously Presented) The method of 38, further comprising:

creating an interface between the first flow pattern and the secondary recirculating flow pattern.

42. (Previously Presented) The method of claim 38, wherein the axes of rotation of both recirculating flow patterns are primarily horizontal and substantially perpendicular to the inlet stream.

43. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

radial introduction of the gas fluidized particle stream into the settling chamber.

44. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing the gas fluidized particle stream at a given volume flow rate of 10-1000 scfm.

45. (Previously Presented) The method of claim 44, wherein the step of introducing comprises:

introducing the gas fluidized particle stream at a given volume flow rate of 100-200 scfm.

46. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing a gas fluidized particle stream comprising one of metal oxide nanoparticles, metal nanopowders, metal nitride, mixed metal oxides, metal carbides and metal sulfide nanoparticles.

47. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing a gas fluidized particle stream comprising particles having a minimum particle size of approximately .001 micron.

48. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing a gas fluidized particle stream comprising free particles.

49. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing a gas fluidized particle stream comprising particle clusters.

50. (Previously Presented) The method of claim 38, wherein the step of introducing comprises introducing a gas fluidized particle stream comprising free particles and particle clusters.

51. (Cancelled)

52. (Cancelled)

53. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing a gas fluidized particle stream at a volume flow rate of at least 10 scfm.

54. (Previously Presented) The method of claim 38, wherein the step of introducing comprises:

introducing a gas fluidized particle stream at a volume flow rate no greater than 1000 scfm.

55. (Currently Amended) A method comprising the steps of:

providing a settling chamber comprising a top section, a bottom section and an inlet port positioned about 6 inches above the bottom section, wherein a ratio of height to width of the settling chamber is between about 1:1.14 and about 1:4; and

introducing a gas fluidized particle stream into the settling chamber at a volumetric flow rate between about 100 and about 200scfm.

~~introducing a gas fluidized particle stream into a settling chamber comprising an outlet port, the gas fluidized particle stream including particles greater than about 10.0 microns in size and particles less than about 10.0 microns in size;~~

~~establishing a gas stream flow pattern within the settling chamber that retards transportation of particles greater than about 10.0 microns to the outlet port and facilitates transportation of particles less than 10.0 microns to the outlet port;~~

~~passing the particles less than about 10.0 microns through the outlet port.~~

56. (Currently Amended) The method of claim 55, wherein the gas fluidized particle stream becomes a gas flow pattern that includes a first recirculating flow pattern and a second recirculating flow pattern.

57. (Previously Presented) The method of claim 56, wherein the first recirculating flow pattern is established in the bottom section and the second recirculating flow pattern is established in the top section.

58. (Previously Presented) The method of claim 56, further comprising:

creating an interface between the first recirculating flow pattern and the second recirculating flow pattern.

59. (Previously Presented) The method of claim 56, wherein the second recirculating flow pattern is sympathetic to the first recirculating flow pattern.

60. (Previously Presented) The method of claim 55, wherein the introducing step includes radial introduction of the gas fluidized particle stream into the settling chamber.

61. (Previously Presented) The method of claim 55, wherein the introducing step comprises:

introducing the gas fluidized particle stream at a given volume flow rate of 10-1000 scfm.

62. (Previously Presented) A method for separating particles comprising the steps of:

providing a settling chamber comprising a base and an inlet port positioned on a side of the settling chamber;

introducing a gas fluidized particle stream into the settling chamber through the inlet port;

establishing a gas stream flow pattern within the settling chamber, the flow pattern including an axis of rotation horizontal and substantially perpendicular to the inlet port.

63. (Previously Presented) The method of claim 62, wherein the gas particle stream includes a first recirculating flow pattern and a second recirculating flow pattern.

64. (Previously Presented) The method of claim 62, wherein the gas fluidized particle stream comprises particles having a minimum particle size of approximately .001 micron.

65. (Previously Presented) The method of claim 62, wherein the gas fluidized particle stream comprises free particles.

66. (Currently Amended) The method of claim 62, wherein the gas fluidized particle stream comprises particle clusters.

67. (Currently Amended) The system of claim 62, wherein the gas fluidized particle stream comprises free particles and particle clusters.

68. (Previously Presented) A settling chamber apparatus comprising:

a top portion and a bottom portion;

an inlet port positioned in a sidewall of one of the top and bottom portions, the inlet port directing a gas stream into the settling chamber in a direction transverse to the opposing sidewall of the settling chamber, resulting in a first recirculating flow pattern in the bottom portion and a second sympathetic recirculating flow pattern in the top portion; and

an outlet port positioned above the inlet port.

69. (Previously Presented) The apparatus of claim 68, wherein the gas stream flow pattern is introduced at a volumetric flow rate of 100-200scfm

70. (Previously Presented) The apparatus of claim 68, wherein the axes of rotation of both recirculating flow patterns are primarily horizontal and substantially perpendicular to the inlet stream.

71. (Previously Presented) The apparatus of claim 68, wherein the inlet allows radial introduction of the gas stream into the settling chamber.